

Claims:

1. A tuning device for use in testing the integrity of a railway line to obtain an improved test signal, the tuning device including an elongate member adapted to be attachable at one end to the railway line being tested in situ or is attachable to an attachment member coupled to the section of railway line, and wherein a vibration signal measuring means is adapted to be secured to the other end of the elongate member.
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2. A tuning device in accordance with claim 1 wherein the vibration signal measuring means is a transducer means.
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3. A tuning device in accordance with claim 2 wherein the transducer means is an accelerometer.
- 15 4. A tuning device in accordance with any one of the preceding claims wherein the elongate member is made of a suitable metal.
5. A tuning device in accordance with any one of the preceding claims wherein the tuning device is made of a non-brittle, high tensile, material that has sufficient elasticity and ductility.
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6. A tuning device according to any one of the preceding claims wherein the elongate member is fastened to an attachment member, and wherein the attachment member is releasably clamped to the head of a railway line.
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7. A tuning device according to any one of the preceding claims wherein the attachment member is an L shaped block of metal.
8. A tuning device according to any one of the preceding claims wherein a dampening means is secured to the elongate member adjacent the vibration signal measuring means to allow for the tuning frequency of the tuning device to be set.
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9. A tuning device according to any one of the preceding claims wherein the dampening means is tubular and is provided with a hollow central section, and wherein a dampening material is provided within the hollowed central section.
- 5 10. A tuning device according to any one of the preceding claims wherein the elongate member is substantially about 13.5 centimetres between an attachment point on the railway line or attachment member and the vibration signal measuring means, and the elongate member is substantially about 16 millimetres in width and about 3 millimetres in thickness, and wherein the tuning device is tuned to measure
10 frequencies at about 80 Hertz.
11. An apparatus for testing the integrity of a section of railway line including a control means, a vibration means, a tuning device configured and arranged to be attachable to said section of railway line in accordance with any one of claims 1 to 10, and a
15 vibration measuring means, the vibration means being associated with a said section of railway line, in use, to directly vibrate the section of railway line, the control means controlling the frequency of vibration and to receive and process measurements of the amplitude of vibration from the tuning device and the frequency of vibration from the vibration measuring means.
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12. An apparatus according to claim 11 further including a temperature measurement means attachable to the said section of railway line to provide a temperature signal to the control means.
- 25 13. An apparatus according to claim 11 wherein the vibration means is a motor having eccentric weights mounted about the motor shaft, and wherein the vibration measurement means is a tachometer mounted to the shaft of the motor.
14. An apparatus according to either claim 11 or claim 12 wherein the distance between
30 the tuning device and the vibration means is between about 60 to 70 centimetres.
15. A system of testing the integrity of a section of railway line, the system including the apparatus of any one of claims 11 to 14 associated with a section of railway line

running over five consecutive railway sleepers aligned transversely under the railway line, the vibration means, in use, being coupled to the railway line adjacent the second sleeper and an accelerometer or the tuning device according to any one of claims 1 to 10 being attachable to the section of railway line adjacent the fourth sleeper, and
5 wherein the distance between the vibration means and the accelerometer or the tuning device is between about 60 to 75 centimeters.

16. A system according to claim 15 wherein the second, third and fourth sleepers are unclipped from the railway line and packing members are placed between the top of
10 the second and fourth sleepers and the underside of the railway line respectively to form an air gap between the third sleeper and the underside of the railway line.

17. A tuning device substantially as herein described with reference to any one of the accompanying drawings.

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18. An apparatus for testing the integrity of a section of railway line substantially as herein described with reference to any one of the accompanying drawings.

19. A system of testing the integrity of a section of railway line according to claim 15
20 substantially as herein described.